

## CLAIMS

What is claimed is:

1. A gray level correction device for tuning a  $\gamma$ -curve signal of a liquid crystal display (LCD), the gray level correction device comprising:

5           a first sensor, which detects an external light source projecting to the LCD, including intensities of light at a plurality of angles, and converts the intensities into a first light source signal;

          a second sensor, which detects the light intensity of a back light source of the LCD and converts the light intensity into a second light source signal;

10          a database, which receives the first and second light source signals, is built with the  $\gamma$  curves of the external light source and the back light source, and outputs a correction signal according to the first and second light source signals;

15          a  $\gamma$ -curve correction device, which receives the correction signal and outputs a  $\gamma$ -curve signal according to the correction signal; and

          a liquid crystal display (LCD) panel, which receives the  $\gamma$ -curve signal and displays an image accordingly.

2. The device of claim 1, wherein the LCD is a transflective LCD.

20          3. The device of claim 1, wherein the first sensor is installed on the shell of the LCD panel.

          4. The device of claim 1, wherein the first sensor includes a plurality of optical sensors.

          5. The device of claim 1, wherein the second sensor further detects a front light source.

6. The device of claim 1, wherein the second sensor includes a plurality of optical sensors.

7. The device of claim 1, wherein the  $\gamma$  curve of the external light source includes an R-V (reflective rate versus voltage) curve.

5        8. The device of claim 1, wherein a preferred angle between the external light source and the user is between  $5^{\circ}$  and  $65^{\circ}$ .

9. The device of claim 1, wherein a preferred angle between the external light source and the user is between  $15^{\circ}$  and  $40^{\circ}$ .

10       10. The device of claim 1, wherein the  $\gamma$  curve of the back light source includes a T-V (transitive rate versus voltage) curve.

11. The device of claim 1, wherein the  $\gamma$ -curve correction device includes a reflective control resistor series and a transitive control resistor series connected in parallel.

15       12. The device of claim 11, wherein the reflective control resistor series and the transitive control resistor series comprise a plurality of serially connected resistors.

13. A gray level correction device for tuning a  $\gamma$ -curve signal of a liquid crystal display (LCD), the gray level correction device comprising:

20       a first sensor, which detects an external light source projecting to the LCD, including intensities of light at a plurality of angles, and converts the intensities into a first light source signal;

a second sensor, which detects the light intensity of a back light source of the LCD and converts the light intensity into a second light source signal;

25       a database, which receives the first and second light source signals, is built with the  $\gamma$  curves of the external light source and the back light source, and outputs a correction signal according to the first and second light source

signals; and

a  $\gamma$ -curve correction device, which receives the correction signal and outputs a  $\gamma$ -curve signal according to the correction signal.

14. The device of claim 13, wherein the LCD is a transflective LCD.

5        15. The device of claim 13, wherein the first sensor is installed on a concave arc structure on the LCD panel and comprises a plurality of the first sensors.

16. The device of claim 13, wherein the second sensor further detects a front light source and comprises a plurality of the second sensors.

10        17. The device of claim 13, wherein the  $\gamma$  curve of the external light source includes an R-V (reflective rate versus voltage) curve.

18. The device of claim 13, wherein a preferred angle between the external light source and the user is between  $5^\circ$  and  $65^\circ$ .

19. The device of claim 13, wherein a preferred angle between the external light source and the user is between  $15^\circ$  and  $40^\circ$ .

15        20. The device of claim 13, wherein the  $\gamma$  curve of the back light source includes a T-V (transitive rate versus voltage) curve.